RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security

CGIAR CCAFS

The SmartAG Partner

CCAFS East Africa Bi-annual Newsletter

July - December 2019

Editing: Seble Samuel, Catherine Mungai and Maren Radeny
Design and Layout: Solomon Makau

Photo Credits: Cover page S.Maylon (CIAT) Page 22. S.Samuel (CCAFS), C. Njuguna (IITA), A. Eitzinger (CIAT) Back page: G.Smith (CIAT)

Contents

Message From
The Program Leader

We are pleased to share with you our SmartAg Partner newsletter, highlighting policy engagement and ongoing research from the second half of 2019.

Our researchers hit the field to Lushoto's Climate-Smart Village (CSV) in Tanzania to build capacity for food systems resilience; to Farmer Field School Trainings and climate-smart agriculture (CSA) scaling workshops in Uganda as part of the Climate Resilient Agribusiness for Tomorrow (CRAFT) project; and with PhD students to Doyogena's climate-smart landscape in Southern Ethiopia to kick off their studies; just to highlight a few!

As part of the CRAFT project, we conducted climate risk assessment workshops for key value chains in Kenya, Uganda and Tanzania. Our team co-developed projections of extreme events across six value chains - potato and green gram in Kenya, soybean and sesame in Uganda, sunflower and common bean in Tanzania.

To build the advocacy capacity of Africa's young people, we facilitated the webinar: Communications for Agri-Climate Justice for the Climate-Smart Agriculture Youth Network (CSAYN). In the lead up to the UN Youth Climate Summit, Global Climate Strike and UN Climate Action Summit, we co-hosted the online discussion and webinar Championing Climate Action: How the youth can step up the fight against climate change in partnership with GSI, CSAYN and the Climate & Agriculture Network for Africa (CANA). We created awareness amongst Tanzanian parliamentarians on gender mainstreaming in climate adaptation, co-organizing a workshop with the CCAFS Gender and Social Inclusion (GSI) flagship, the Tanzania Climate-Smart Agriculture Alliance (TCSAA) and other partners.

We celebrated the Nyando CSV Community Seedbank Launch in Western Kenya to conserve biological diversity and strengthen food systems resilience alongside Bioversity International and regional partners.

In September we hosted the International Fund for Agricultural Development (IFAD) learning journey on transformative approaches to mainstream climate change, nutrition, gender and youth as well as a South-South learning exchange across Southern Ethiopia for IFAD and the Southern African Confederation of Agricultural Unions (SACAU).

We continued to make our mark internationally, participating in the African Climate Risks Conference in Addis Ababa, Ethiopia, to accelerate climate adaptation across the continent; the C40 Global Mayors Summit in Copenhagen, Demark speaking at the plenary session The Future We Want is Resilient; and at the Global Science Conference on CSA: Transforming Food Systems Under a Changing Climate in Bali, Indonesia.

We supported the launch of Ethiopia's digital agro-climate advisory platform, known as EDACaP, a multidisciplinary setup to ensure Ethiopia's food systems and livelihoods are climate-resilient – potentially benefiting about 60,000 extension agents advising more than 18 million smallholder famers.

Read on for details from the second half of 2019 and please share this newsletter with your networks.

Dr. Dawit Solomon

1

East African policy makers advocate for gender in climate policy

Policy makers from nine East African countries pledge to lobby governments and policy influencers to consider gender mainstreaming in national climate change policies.

By Mary Nyasimi, Dana Elhassan and Faith Gikunda

A workshop on gender mainstreaming in East African climate change policies took place between 16 and 17 May 2019 in Nairobi, Kenya. The workshop was organized by the African Development Bank Group (AfDB) through its Inclusive Climate Change Adaptation for a Sustainable Africa (ICCASA) project and was funded by the Korea-African Economic Corporation (KOAFEC).

AfDB is implementing several interventions in line with their Ten-Year Strategy, High 5 Priority Areas, Gender Strategy and Second Climate Change Action Plan, with a focus on increasing inclusivity and ensuring sustainable development. During the two-day capacity building and strategy meeting, policy makers from Ethiopia, Tanzania, Burundi, Comoros, Kenya, Djibouti, Eritrea, Uganda and Sudan were represented.

The participants committed to work with their fellow policy makers to do the following:

1. Parliamentary engagement to raise awareness of gender mainstreaming in climate change actions and policies. With this knowledge, parliamentarians can scrutinize climate change-related legislation and assess government responses to gender and climate change issues, supported by appropriate gender-responsive budget allocation.

2. Capacity building for policy makers to develop skills, knowledge and tools to mainstream gender and empower women in climate change actions and policies. Capacity building also enables policymakers to identify entry points for gender-responsive action and determine which actions are appropriate.

3. Developing and implementing national gender action plans (GAP) to guide the creation of gender responsive climate policies and actions, while acknowledging the critical contributions of women to achieving climate resilience. The GAP will be designed to fit national contexts, priorities and will align with existing climate change legislation.

Burundi representative Prudence Bizimana noted that gender features prominently in the country's policies. Implementation, however, will require continued work. Madam Fatma Toufiq, a Member of Parliament in Tanzania, also noted the crucial need for African policymakers to meet often in order to share lessons learned and support each other in gender and climate change issues.

George Wamukoya of the African Working Group on Gender and Climate Change (AWGGCC), a key ICCASA project partner, cited a number of significant efforts to mainstream gender into national climate change action plans and policies, Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), Reducing Emissions

G.Smith (CIAT)

Suitable policies can enable women to use agriculture to contribute to economic growth while addressing their food security needs.

from Deforestation and Degradation (REDD+), and National Communications (NC). He further stated that, regardless of all this remarkable progress in aligning gender and climate change, there are still enormous opportunities that need to be maximized to ensure gender is mainstreamed.

Ugandan participant Anastasia Munsana observed gender mainstreaming in national policies by designing gender sensitive projects, such as addressing adoption barriers for improved charcoal production technologies and sustainable land management.

Despite the enormous efforts of various countries, a gender mainstreaming gap remains in national policies. Participants highlighted the hope for Africa to achieve maximum gender mainstreaming in NDCs, NAPs, NAMAs and other commitments to equitably combat the effects of climate change.

This policy event was the result of an organized partnership between the African Working Group on Gender and Climate Change (AWGGCC), the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), and World University Service of Canada (WUSC).

Mary Nyasimi is the Gender and Climate Change Advisor for the ICCASA project. Dana Elhassan is Senior Gender Specialist for the African Development Bank. Faith Gikunda is Communications Specialist for the ICCASA project.

2

Tanzania's female parliamentarians to mainstream gender in climate adaptation

Tanzania's Women Parliamentarian Group came together to explore pathways for mainstreaming gender into climate adaptation planning.

By Shakwaanande Natai, Madaka Tumbo, Winifred Masiko and Henry Mahoo

Climate change has been described as a wicked problem, with complexities, feedback loops and tipping points that can cause damage in the most undeserving of places. Across Tanzania, the climate crisis manifests in the form of higher temperatures, an increase in the frequency and magnitude of droughts and floods, and rising sea levels.

Women face disproportionate impacts of the climate emergency, due to unequal rights and socio-economic status compared to men, meaning climate impacts will widen the gender gap. The World Bank estimates the gender productivity gap in Tanzania alone is $105 million. This gap could be decreased if national policies, programs, and plans enable women to use agriculture to lift themselves and their families out of poverty and contribute to economic growth, as well as through targeted adaptation and mitigation measures that are gender-responsive. The Bank of America predicts that such approaches could have positive economic impacts, estimating that achieving women's equality could boost global gross domestic product (GDP) by up to 31 percent.

Mainstreaming gender and climate

In light of these challenging dynamics, Members of Parliament (MPs) came together in September 2019 for an awareness training on gender mainstreaming in climate change adaptation in Tanzania, with the objective to:

- Enhance the knowledge of MPs on gender to facilitate the smooth implementation of the established gender-sensitive policies, plans and strategies at national and sub-national levels.
- Provide an opportunity for MPs to understand the critical role gender plays in implementing climate change actions.
- Strengthen the knowledge of MPs regarding methods and tools that can facilitate the implementation, monitoring and evaluation of gender-responsive policies, plans and strategies.
- Provide a platform for MPs to kickstart the process of brainstorming on the revision of Tanzania's Gender and Climate Change Action Plan.

C. Njuguna (IITA)

Tanzania's women parliamentarians meet on gender and climate.

G.Smith (CIAT)

A farmer working the field in Lushoto, Tanzania, one of the areas that experience adverse soil degredation.

The climate stakes

Extreme weather events have already led to major economic costs in Tanzania, estimated at USD$200 million per year for the agricultural sector alone (CIAT and World Bank (2017): Climate-Smart Agriculture in Tanzania), reducing long-term growth and affecting millions of people and their livelihoods. The net economic costs of addressing climate change impacts could be equivalent to one to two percent of the GDP per year by 2030.

In the past two decades, the country has experienced rising temperatures with frequent and severe droughts. Since 1960, average annual temperatures increased by 1.0ºC with projections to increase between 1.7°C and 2.5°C in semi-arid areas (SAs) by 2030. Mean temperature and rainfall changes including increased variability of rainfall will have devastating effects on agriculture, food security, and ecosystems.

Strides forward in the climate-gender nexus

While the Government of Tanzania has developed an extensive policy repertoire to address the complex challenges at the nexus of gender and climate, implementation is still lagging, particularly with regards to gender-sensitive adaptation and mitigation strategies. The MPs gathered at the gender and climate mainstreaming training, therefore, agreed to enable the implementation process through the following agreements:

1. Generate evidence to support engagement with MPs to increase their understanding on climate change and its impacts in Tanzania.
2. Identify gender and climate change champions to advocate for gender and climate change mainstreaming into national and district development planning and budgeting.
3. Enhance the capacity of MPs to effectively participate in the review process of the Gender and Climate Change Action Plan.
4. Support some MPs to attend the upcoming Commonwealth Parliamentary Conference, held in Uganda on 22-29 September 2019, to share the outcomes of this seminar.
5. Strengthen engagement with MPs, relevant ministries, departments and agencies, District Executive Councils, CSOs and other actors at different levels in the design and implementation of climate change actions.

Once implemented, these actions could serve as important enablers moving gender-responsive climate policies from theory to practice across Tanzania.

Read more:

News update: East African policy makers advocate for gender in climate policy: https://bit.ly/2UanAMP
News update: African negotiators talk adaptation tracking, soil fertility and gender: https://bit.ly/2THZNVq
Research highlight: Why 'gender mainstreaming' isn't sufficient for advancing gender equality: https://bit.ly/38JkhBo
Blog: Africa Environment Day: CCAFS highlights efforts to bridge the agricultural gender gaps in Ethiopia, Mali, Rwanda and Senegal: https://bit.ly/2W46vXm
News update: Gendering climate-smart agriculture in Doyogena, Ethiopia: https://bit.ly/2W04TOl

Shakwaanande Natai is National Coordinator at the Tanzania Climate Smart Agriculture Alliance (TCSAA). Madaka Tumbo is Hydrologist at the Global Water Partnership (GWP) and Lecturer at the Water Institute (WI). Winifred Masiko is Member of the African Working Group on Gender and Climate Change (AWGGCC) and Consultant at The Skills Gallery. Henry Mahoo is Chairperson at the TCSAA and Professor at the Sokoine University of Agriculture (SUA).

3

De-risking agricultural value chains using climate-smart agriculture

Across the value chain, farmers face risks from production to market. Experts meet in Nairobi to identify opportunities to de-risk key agricultural commodities.

By Hannah Kamau, Victor Mugo, Christine Lamanna, Catherine Mungai and Seble Samuel

In April 2019, professionals from the soft commodity sectors who represent diverse value chains across the African continent came together for the Sustainable Agriculture Summit in Nairobi, Kenya. The gathering served as an opportunity to learn from best practices, technologies, partnerships and real-life implementation of sustainable agriculture practices.

As part of the summit, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), in collaboration with the International Center for Tropical Agriculture (CIAT), the World Agroforestry Centre (ICRAF) and the Climate Smart Agriculture Youth Network (CSAYN) Kenya chapter, hosted a workshop on the role of climate-smart agriculture (CSA) in de-risking agricultural value chains. Twenty-five participants mapped their value chains while identifying key risk factors and developing business pitches for CSA interventions that would de-risk their respective value chains.

"CSA as a de-risk strategy is based on three major concepts: sustainably increasing agricultural productivity, improving resilience to climate-related shocks, and mitigating greenhouse gas emissions where possible" explained Christine Lamanna, Climate Decision Scientist at ICRAF, and co-facilitator of the workshop. "But the question is, can such an approach also make business sense?"

Overall, climate change risks—particularly from droughts, unpredictable rainfall and flooding—were found to affect production in all commodities, with the production stage being the most affected. "For us, flooding is the biggest risk for horticultural farmers at the Kenyan coastal area" said Benson Mwendia, a farmer from Kilifi County, Kenya, and founder of the CSA Excellence Center.

To offset these risks, climate-smart interventions such as provision of clean, certified, drought tolerant seeds, water harvesting and irrigation, changing harvesting times, use of cover crops and regular soil checks were identified as remedies.

Beyond production risks

However, risks are not only found in the production stage. "Most of the agricultural losses and waste happen during post-harvest" noted Philip Simiyu, a graduate student at the University of Nairobi. Kenya loses 5 million bags of maize yearly to poor post-harvest handling through inadequate storage facilities and poor preservation techniques. With traditional drying techniques, changing weather patterns result in prolonged drying times and upraised aflatoxins. The situation is further worsened by long transportation periods from farms to markets. CSA options to mitigate post-harvest losses such as drying grains using solar dryers, use of appropriate preservation facilities, changing harvesting times

K. Trautmann (CGIAR)

As agricultural livelihoods face increasing threats, experts meet in Nairobi to find pathways to de-risk key value chains.

and use of better storage bags could de-risk this stage of the value chain.

Evidently, the potential of CSA to mitigate risks in value chains is high, so why aren't farmers and agribusiness professionals implementing them? A key barrier to adoption of CSA was found to be access to finance. Luckily, there are a growing number of innovative financing mechanisms, such as Financial Access, which lends exclusively to CSA and agribusiness farmers. Insurance is another option to reduce the financial risks faced by farmers. "Insurance for agriculture isn't just limited to weather index-based insurance anymore. New products are being developed that cover the entire value chain, including risks to labor" said Wairimu Muthike of ACRE Africa.

There was agreement on CSA's potential for risk mitigation as well as its business sense: " we need to bring the private sector to farmers to bridge the gap and engage the government in support of local farmers incentives" concluded Kenneth Monjero, Lead Scientist with Kenya's Agricultural and Livestock Research Organization (KALRO).

Read more:

Working paper: Climate risk assessment for selected value chain commodities in Rwanda: https://bit.ly/3aNmo8u
Project: Developing climate-smart value chains and landscapes for increased resilient livelihoods in West Africa: https://bit.ly/2xvNNxx

Hannah Kamau is Research Assistant at the World Agroforestry Centre (ICRAF). Victor Mugo is Country Coordinator at the Climate Smart Agriculture Youth Network (CSAYN). Christine Lamanna is Climate Decision Scientist at ICRAF. Catherine Mungai is Partnerships and Policy Specialist at CCAFS East Africa. Seble Samuel is the Communications and Knowledge Management Officer at CCAFS East Africa.

4

Guiding investments in climate-smart livestock systems in East Africa

New project aims to ensure that key actors in the livestock sector increase climate change adaptation and mitigation in farming practices, sector strategies and investment projects.

By Lili Szilagyi and Laura Cramer

In Sub-Saharan Africa, livestock is crucial for the livelihoods of more than 80 percent of poor households. In addition, as a result of a growing population, increasing income and urbanisation, demand for livestock products is rising steadily across the region.

This might seem like a good combination—those with rising purchasing power can buy more livestock products, thereby helping to increase the incomes of poor livestock keepers. Throw the climate crisis into the mix, however, and the situation turns sour. Climate change has a negative impact on livestock production. Rising temperatures and lower annual rainfall reduce livestock productivity and inhibit the growth of fodder crops. Soil degradation and water scarcity led to declines in food for animals. Land-use conflicts are increasing, threatening food security and gradually eroding livestock farmers' livelihoods.

On the other hand, livestock production is not only affected by the impact of climate change, but it also contributes to it. For example, in many countries in the region, the agricultural sector is the largest source of greenhouse gas (GHG) emissions. The largest part often comes from livestock production, such as emissions released during the digestive process of ruminants, from storage and application of manure, and in fodder production.

Many countries indicate in their Nationally Determined Contributions (NDCs) their willingness to implement measures for reducing livestock sector emissions; however, emissions data is not yet available for accurately determining the mitigation potential of climate-smart livestock systems. Such systems are better adapted to the impact of climate change and contribute to climate change mitigation. Livestock farmers and policy-makers in particular require information on possible climate scenarios and tried-and-tested solutions for their implementation.

New project to support climate-smart livestock systems

In the past few months, the Program for climate-smart livestock systems (PCSL) was launched in Kenya, Ethiopia and Uganda by the International Livestock Research Institute (ILRI) to support interventions to increase the contribution of livestock production to the three key pillars of CSA: increased productivity, mitigation of GHG emissions and adaptation to climate change. The program is being implemented across four different major livestock production systems in the three countries until 2022.

The PCSL will take an integrated three-pronged approach that aims to improve capacities of different stakeholders to implement interventions to support climate-smart livestock development:

1. At the local level, ILRI will work with livestock keepers to identify and test field practices that are currently technically possible but need additional support to make them socially and economically feasible, such as the

C. Hanotte (ILRI)

Portait of young Boran cattle in Ethiopia.

improvement of the quality of livestock feed.

2. At the district and national level, ILRI will support line ministry staff, the private sector and civil society representatives to develop the appropriate enabling environment for implementing climate-smart livestock development. ILRI will also provide decision-making support through the participatory development of plausible future scenarios, particularly given the uncertainty about the future and the differing objectives of key decision makers in the context of climate change.
3. Finally, ILRI will develop measurement, reporting and verification (MRV) tools as well as baseline GHG emission data for addressing the mitigation agenda. In addition, adaptation tracking protocols will be developed to support the country's reporting on progress towards their climate change adaptation targets. Tools will be developed in line with modalities, procedures and guidelines of the Enhanced Transparency Framework of the Paris and Katowice agreements.

The PCSL will support governments, the private sector and local stakeholders in realizing their development objectives while also achieving their climate change adaptation and mitigation goals. The project will ensure that the expected short, medium and long-term impacts of climate change on the livestock sector are taken into account in the planning of policy frameworks, strategies and investment projects.

Read more:

Project page: Program for climate-smart livestock systems: https://bit.ly/2TQfdpa
Working paper: Climate and livestock policy coherence analysis in Kenya, Ethiopia and Uganda: https://bit.ly/2THZN7D

The project is financed by the GIZ commissioned by the Government of the Federal Republic of Germany.

Lili Szilagyi is the Communications Consultant for the CCAFS Flagship on Priorities and Policies for CSA. Laura Cramer is the Science Officer for the CCAFS Flagship on Priorities and Policies for CSA.

5

Launching digital agro-climate advisory platform in Ethiopia

Digital systems are being implemented for climate-resilient agricultural livelihoods in Ethiopia.

By Seble Samuel

There was a time when traditional ecological knowledge was enough. When ancestral wisdom guided communities to sense the moods of the rains, the temperaments of the winds, the hidden messages of the clouds. Through these interpretations of nature, farming communities could foretell times of planting, times of abundance and times of harvest.

These times are decidedly gone. An atmosphere saturated by carbon has done more than uproot physical ecosystems, halt livelihoods and abruptly displace whole communities, leaving only a memory of something familiar; it has disrupted and stolen from traditional ecological knowledge systems.

In this era of climate emergency, what is left when traditional knowledge is no longer enough?

Digital agriculture—complete with its repertoire of climate services, agricultural advisories and mobile technologies, weather forecasts and agricultural data infrastructure, sensors and spatial modeling—is emerging to bolster these disrupted knowledge systems. The alliance of digital technologies and agricultural systems is a promising response to the struggles of rising populations, growing food demand and ecological crisis by transforming food systems, harnessing resource efficiency, building sustainability and amplifying productivity.

A home for digital systems within the agricultural sphere can takes many forms. It can involve early warning systems to identify livestock health or disease; seasonal climate forecasts delivered to farmers' mobile phones; real-time mapping of market demand for specific agricultural commodities; and the list goes on. The coupling of such digital insights to the realm of soil and sun holds many rewards: analyzing the upcoming seasons, exploring ideal times to plant, honing in on preferred crops, localizing promising markets, identifying how to heal damaged soil, forewarning climate extremes and pest outbreaks. These digital approaches help to shield farming livelihoods from the deluge of uncertainties brought forth by the climate crisis, as well as to boost productivity, adaptive capacity and market connectivity.

Grounding digital agriculture in Ethiopia

In the midst of Ethiopia's exponential population climb and the strikes of the climate emergency with erratic rains, dry spells, sharp floods and failed crops, the country launched a digital agro-climate advisory platform, called EDACaP, to put resilience at the center of agricultural livelihoods.

A team effort led by the Ethiopian Institute of Agricultural Research (EIAR) in partnership with the Ministry of Agriculture (MoA) and the National Meteorological Agency (NMA), alongside numerous research centers and programs: the International Center for Tropical Agriculture (CIAT), the International Maize and Wheat Improvement Center (CIMMYT), the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the International

G.Smith (CIAT)

Traders checking the price of beans. New white pea bean varieties developed by researchers at the Ethiopian Institute of Agricultural Research (EIAR) in Ethiopia and CIAT are more drought-resilient, pest and disease resilient than previous varieties.

Research Institute for Climate and Society (IRI), with support from the Agricultural Growth Program (AGP), the EDACaP has come to life.

"From paper, we've gone digital," said Dr. Eyasu Abreha, Advisor to the Minister of Agriculture, celebrating the launch of the EDACaP.

The advisory platform is composed of four complementary elements: an agro-climate database hub, climate modelling, crop modelling and a dissemination platform. EDACaP combines 1) geographical data, including geospatial information on site characteristics and agroecological zones; 2) climate data, both historical and projections from scenario analysis; 3) weather data, using seasonal and sub-seasonal data; 4) soil data, including physical, biological and chemical characteristics; 5) crop data and varieties, currently focused primarily on cereals but soon expanding to legumes, stimulants and vegetables; and 6) agronomic information, mainly concentrated on management data.

This data is interpreted into yield forecasts, agro-climate advisories and climate scenarios that are targeted to specific geographies and agricultural value chains, and disseminated to farmers through extension training, mobile technologies, early warning systems and multimedia. These translations of complex science to smallholder farmers improve decision making on diverse elements including the selection of crop fields and varieties, timing for planting and harvesting, ideal irrigation approaches, as well as measures to prevent pests and diseases.

"The farmer is the biggest decision maker," said Dr. Kindie Tesfaye, Senior Scientist at CIMMYT. As a country whose agricultural systems are highly dependent on rainfall, these digital interventions will serve as key decision support tools to manage climate risk and bolster the adaptive capacity of Ethiopia's smallholder farmers. "Our effort must be in creating resilient agricultural systems that are not shocked by climate risks," said Dr. Diriba Geleti, Deputy Director General for Research at EIAR.

For these digital transformations of food systems to be possible, many hurdles must be overcome, the most pressing being ensuring digital systems do not exacerbate inequalities, as well as overcoming capital constraints, limited technologies, infrastructure gaps in commercialization, and building regulatory frameworks, digital access and literacy, digital innovation and entrepreneurship models.

EDACaP's pilot phase has already reached 82,000 smallholder farmers across Ethiopia and is expected to reach 16.7 million farmers once scaled through the Ministry of Agriculture and the country's more than 60,000 agricultural extension agents.

EDACaP is not alone in the push to facilitate Ethiopia's food systems to go hand in hand with digital approaches. YeZaRe, developed by the social enterprise Echnoserve, is a digital mobile system that provides weather and market data to smallholder farmers, as well as connects these farmers to markets to ensure income for their livelihoods and reduce losses at the hands of middlemen. Currently there are more than 33,000 registered users, ranging from farmers to cooperatives to extension workers to wholesalers. By connecting the dots on climate data and market information, YeZaRe is able identify key markets for smallholder farmers to boost both their livelihood incomes as well as their climate resilience.

Taking digital agriculture internationally

Around the world, digital agriculture is gaining traction. In the words of Dhanush Dinesh, Global Policy Engagement Manager at CCAFS, and Ana María Loboguerrero, Head of Global Policy Research at CCAFS, "digitization of agriculture can play a key role in enabling the agricultural sector to leapfrog traditional development pathways. It can also enable farmers to make their livelihoods profitable and resilient to climate change impacts."

According to these scientists, there are six key elements to making such a transformation possible: boosting digital connectivity, sustaining tailored data services to smallholder farmers, making a strong business case, building enabling environments, scaling digital models and finally evaluating progress in an ongoing manner.

If these obstacles can be overcome, "digital systems can be a great equalizer," said Dr. Dawit Solomon, East Africa Regional Program Leader of CCAFS.

Seble Samuel is the Communications and Knowledge Management Officer for CCAFS East Africa.

6

Nyando Climate-Smart Village launches community seedbank

Western Kenya now houses its very own community seedbank, a collection of the region's biological diversity.

By Seble Samuel and Gloria Otieno

Farmers from across Kenya, Uganda and Tanzania traveled from their agricultural fields to Nyando in Western Kenya to celebrate the launch of the community's new seedbank. "We were travelling long journeys for seeds" said farmer Evelyn Kugonza, "but now we are travelling short distances, because we have a seedbank. It has expanded our knowledge and our income." Community seedbanks are now housed in two of East Africa's Climate-Smart Villages (CSVs) in Nyando, Kenya and Hoima, Uganda.

Nyando's community seedbank* is the result of four years envisioning and laboring towards a seed diverse future. Together with the region's dedicated farmers, and the lead of Bioversity International, the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) in East Africa along with key multi-level partners** has been instrumental in getting this project off the ground.

The seedbank allows farmers to access a wide range of diversity for climate change adaptation, and helps them protect and conserve their biological diversity and improve seed storage. In doing so, the seeds go hand in hand in boosting the adaptive capacity of farmers, by housing climate resilient varieties and the essential seed diversity that helps shield their livelihoods from climate risks.

A snapshot into Nyando's community seed bank

The millet, sorghum and bean seeds that fill Nyando's seedbank have been exchanged from the national genebanks of Kenya, Uganda and Tanzania, using climate and geospatial mapping to identify them from a pool of genetic resources held by the genebanks.

A total of 220 seed varieties were identified and then exchanged from the multilateral system of access and benefit sharing*** using Standard Materials Transfer Agreements

S. Samuel (CCAFS)

Ronny Philly Muga, a volunteer at the seedbank, helps with the final preparations for the launch of Nyando's community seedbank.

S. Samuel (CCAFS)

Nyando's community seedbank launch and seed fair brings together the region's biological diversity.

(SMTAs)—the process for requesting genetic materials across parties of the multilateral system—between the three competent authorities. The seeds were multiplied and evaluated for suitability to agroecological conditions in Nyando by the Kenya Agricultural & Livestock Research Organization (KALRO) and Bioversity International along with farmers. The seeds were then tested on site to evaluate their resilience to climate change, pests and diseases. The seeds that remain after the selection, are, at least for now, the "crowd favorites."

To make sure the seedbank can remain a bountiful community resource in the future, farmers have developed guidelines for its sustainability. "The criteria is that when you take one seed you return two, if you take five, you return ten, that is how we keep it sustainable," said David Musuya, Field Technician with CCAFS, referring to the conditions set by the farmer members themselves.

For now, the community seedbank houses 100 sorghum, 100 millet and 20 bean varieties. And with the seedbank's "return" policy, this is only set to multiply, boosting the resilience of all participating farmers. In many ways, seed diversity is like free insurance when you face a changing climate.

From subsistence to sales

Moving from subsistence farming to the terrain of markets can be difficult for farmers. "Understanding the business and restrictive seed sale laws that require certification are leading challenges," said Ruth Nabaggala, Seed Market Development Associate with PELUM Uganda. To address these setbacks, farmers were exposed to the ins and outs of financial management and marketing strategies during a two-day training workshop on seed business management for

S. Samuel (CCAFS)

Farmers looking at the different seed varieties that were on display during the community seed bank launch.

seedbanks. Farmers shared their following key challenges and opportunities to making sound seed business management a reality.

Ethiopia, Malawi and Uganda are looking forward to working with other member countries to develop more efficient and sustainable agricultural systems to meet growing global demand for food in the context of a changing climate.

"As farmers, we have to have accountability, we have to know how we are going to invest every season, if we are improving or moving backwards," said Evelyn Kugonza. "We were asking ourselves how we were going to plan. Now we are happy, we have learned to make a business plan; that is important."

It is vital that momentum continues to grow, expanding seed sharing across the region. Nyando's community seedbank not only reflects a critical step in building the economic resilience of farmers, it is instrumental in preserving the biological sovereignty of their livelihoods.

**The seedbank is supported by the Benefit Sharing Fund (BSF) of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) under the project "Open Source Seed Systems for Climate Change adaptation in Kenya, Uganda and Tanzania."*

***Key partners include KALRO, Genetic Resources Research Institute (GeRRI), Sustainable Agriculture and Natural Resource Management Africa (SANREM Africa), HIVOS East Africa, Uganda's National Agricultural Research Organization (NARO), and Tanzania's Plant Genetic Resources Center (TPGRC).*

****This system was developed by the ITPGRFA and serves as an open-access international platform for conservation, sustainable use and equitable sharing of plant genetic resources for food systems.*

Read more:

News update: Building resilience across East Africa one seed at a time: https://bit.ly/2UaFEX9
News update: The future of banking is in seeds: Hoima district establishes a community seedbank to strengthen farmers' adaptive capacity: https://bit.ly/2W149IJ
News update: Seed networks for climate change adaptation in Kenya, Uganda and Tanzania: https://bit.ly/2wPmvSe
Blog: Open source seed systems for climate change adaptation in Kenya, Uganda and Tanzania: highlighting the importance of policy support: https://bit.ly/2wMFxJe

Seble Samuel is the Communications and Knowledge Management Officer for CCAFS East Africa. Gloria Otieno is an Associate Scientist at Bioversity International.

7

Enhancing capacity for resilient agriculture planning and programming in Kenya

Insights and lessons learned on disseminating Kenya's climate-smart agriculture strategies, frameworks and investment plans.

By Hannah Kamau, Ivy Kinyua and Victor Mugo

Kenya has made significant progress in the development of agricultural policies, yet implementation remains elusive, aggravating food insecurity challenges. To address this gap, recent field visits were conducted across the counties of Nyeri, Kajiado and Taita Taveta to disseminate Kenya's Climate-Smart Agriculture (CSA) Strategy and Implementation Framework. This groundwork strived to support efforts to operationalize CSA into county-level action planning. Key insights have been drawn in the following lessons for communities and officials who seeks to operationalize CSA at multiple levels.

Lesson 1: Strike while the iron is hot

The period between policy launch and dissemination is very crucial. Often times, policies have been made and disseminated too late or just when policy review is due. It is only through dissemination that the disconnect between policymakers and implementers can be bridged. The implementation lag is worsened by national commitments such as the Nationally Determined Contribution (NDCs) that seek to report progress within a specified period of time. We advise quicker and efficient dissemination programs that can reach as many sub-national implementers as possible to give them ample time to review and shape the policy, as well as operationalize it to their relevant contexts.

Lesson 2: Two flints can make a fire

When not limited to multilateral parties, effective partnerships are a major plus for transformative agriculture. More than just creating synergies, collaborative partnerships help organizations to combine their expertise in delivering innovative and scalable climate change and agriculture solutions. For example, the Climate Change Unit of the Ministry of Agriculture, Livestock and Fisheries (MoALF), the United Nations Food and Agriculture Organization (FAO), the International Center for Tropical Agriculture (CIAT) and World Agroforestry (ICRAF) came together to disseminate the climate-smart policies and support sub-national governments in identifying their CSA investments. A partnership that yielded more wins than if we had worked in isolation.

Lesson 3: Finances

Climate finance is a key driver for promoting CSA. For example, when carrying out our mission we had to separate the different levels of actors in the counties. In a week-long exercise per county we sensitized the Members of County Assembly (MCAs), the members of County Executive Committee Members (CECMs) and the implementers – technical officials in the County Agriculture Department. These activities, while important, called for financial planning and consideration while formulating policies that require

T. Muchaba (CCAFS)

A farmer tending to her crops in Nyando where climate - smart practices are being implemented by smallholder farmers affected by climate change.

local action. These should not be limited to sensitization and dissemination stages but instead reach as far as implementation on the ground.

Lesson 4: Harmonized approaches

During an exercise of mapping county initiatives with the technical teams, we discovered that many organizations were already working independently with the communities to build resilient agricultural systems. Risks of initiatives duplication and sometimes information conflict are inevitable. Leveraging the independent organizations to form one platform guided by an end goal could increase efficiency in the dissemination process, mobilization of funds and promotion of CSA. Currently, in Kenya, several climate change and agriculture multi-stakeholder platforms could be leveraged at the sub-national level to promote resilient agriculture and reduce isolated interventions, in particular, the national multi-stakeholder platform on CSA.

Lesson 5: Target audience

It is important to select the right stakeholder groups to engage so as to convey information that is relevant, appropriate and leads to action. Understanding their roles, needs and priorities cannot be understated if we are to effectively deliver on intended objectives. Therefore we identified the political leadership (Members of County Assembly, County Executive Committee Members, Technical Officers) as important stakeholders to engage. Having acknowledged their diverse roles, we tailored the activities, language and design which ultimately led to facilitating separate sessions for effective sensitization.

Lesson 6: Peg implementation on scientific evidence

As part of the mission activities, we supported the counties to develop CSA investments through their technical officers based on their sub-sector (crops, livestock and fisheries) expertise. To do this we used the CSA compendium databooks and Evidence for Resilient Agriculture (ERA) developed by ICRAF, with support from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and CIAT, to pinpoint agricultural practices for specific contexts and geographies. This provided the technical officers with multiple technologies, innovations and interventions to understand, identify and select practices that would contribute to CSA.

Through these county missions, it became apparent that CSA is still a confusing and complex concept that requires multifaceted approaches to effectively deliver on its triple wins. More than that, there are many underlying factors (finance, data, attitudes, inclusivity) that influence its success. Therefore, as we strive to ensure food and livelihood resilience, we must continually recognize these gaps and develop lasting solutions. We must also acknowledge our individual organizational strengths and combine powers to promote resilient agriculture.

This work was supported through the United States Department of Agriculture (USDA), Foreign Agricultural Service (FAS), Enhancing Capacity – Low Emission Development Strategies (EC-LEDS) Phase II: Resilient Agriculture Planning and Programming in Kenyan Counties, with funding from the U.S. Department of State with additional support from the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) Partnerships for Scaling CSA Project and the United Nations Food and Agriculture Organization (FAO).

Read more:

News update: Kenya launches Climate-Smart Agriculture Strategy for 2017-2026: https://bit.ly/2TW2di2
News update: Kenya launches framework to implement climate-smart agriculture: https://bit.ly/2wSQrgj
News update: Stakeholders come together in Nairobi to create a vibrant platform for climate-smart agriculture across Kenya: https://bit.ly/39JbwIS
News update: Guiding investments in climate-smart livestock systems in East Africa: https://bit.ly/39IMJof

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8

Is climate-smart agriculture the silver bullet to attract youth to agriculture?

The average African farmer's age is nearly 60. Stakeholders come together to brainstorm pathways of inspiring young people into agriculture.

By Victor Mugo, Hannah Kamau and Seble Samuel

With the average African farmer's age hitting nearly 60 years, the sector's stakeholders have been diligently working to come up with measures on how to attract and retain youth in the sector. There have been a myriad of suggestions, but none of them seemed as attractive as engaging youth through climate-smart and digital agriculture.

In April 2019, thought leaders, policy experts, researchers, the private sector and youthful farmers joined a sizeable audience of participants at the first Agtech Africa summit, held in Nairobi, Kenya. These stakeholders came together to discuss the potential of climate-smart and digital agriculture in attracting young people and thereby rejuvenating an aging global agricultural sector.

Victor Mugo, Country Coordinator for the Climate Smart Agriculture Youth Network (CSAYN), started by dispelling the notion that youth keep away from the farm because it is a 'dirty job'. He went on to clarify that young people shy away from farming because it is not profitable: "With the train of risks that are often exasperated by climate change, young people see the sector offering little opportunity for economic enrichment and social fulfilment. Agriculture can only be cool if youth can make a decent living out of it."

While concurring with Victor's statement, Benson Mwendia, a young farmer who keeps poultry and grows watermelons, onions, okra and chillies, narrated his chilling experience with climate-related disasters that had wreaked havoc in his farm: "My farm sits only a stone throw away from River Sabaki and while I benefit from a regular supply of water, I am also constantly staring at the threat of flooding."

For him, his saving grace was his introduction to climate-smart agriculture (CSA) and the reinforcement of this knowledge through Kilifi County's Climate Risk Profile that elaborated the available menu of options on how to adapt to climate-related threats. "With the new knowledge, I have been able to significantly reduce some of the risks associated with growing these crops and I am now making a good return from my farming activities" he reported.

Benson has also gone a step forward and turned his farm into a Climate-Smart Agriculture Excellence Centre (CSAEC). He now makes an extra income teaching farmers on how to strengthen their local capacity to adapt to perennial climate-related hazards through adopting CSA technologies and management practices.

The final panellist Philip Simiyu, a young maize farmer studying agricultural economics at the University of Nairobi, noted that although CSA increases agricultural production and builds the resilience of farmers, post-harvest losses and lack of stable markets water down all these gains. Even after increasing his maize produce, Philip shared how he suffered

C. Schubert (CCAFS)

What are the best ways to attract youth to farming? Agricultural experts explore if climate-smart agriculture could be the key.

at the hand of poor market prices and pests that ate his profits away. Having learned his lesson, he now advises young farmers to acquire a market-oriented farming mind-set that allows them to 'sell before they plant'.

George Wamukoya, a policy expert from the Africa Group of Negotiators Expert Supporter (AGNES) team brought the session to a subtle conclusion, warning that CSA was not a miracle solution. He advised that appropriate technologies and management practices needed to be matched with different weather conditions, soil state, topology and agro-ecological zone. However, he also noted that by using CSA, farming activities could become less risky and therefore more profitable. With this, young people could find it more appealing as a sector to venture into.

Read more:

News update: Diverse youth groups come together for climate-smart agriculture: https://bit.ly/2TIySc8
News update: The future of farming: The potential of young people in the agriculture sector: https://bit.ly/3cShg4L
News update: Youth, agriculture, and innovation: Building the capacity of young entrepreneurs to mange climate risks: https://bit.ly/2W6Mqzp
News update: Encouraging African youth to adopt climate-smart agriculture: https://bit.ly/2w1iOsC
Publication: Youth engagement in climate-smart agriculture in Africa: Opportunities and challenges: https://bit.ly/2xsyIwB

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9

Raising farmers' awareness on climate risks and adaptation with radio broadcasts

Radios are the farthest reaching tool in Rwanda. Equipped with climate information, they have become a key messenger for farmers in creating resilient food systems.

By Yvonne Munyangeri and Seble Samuel

In Rwanda, radio coverage is 98%, which makes radio broadcasts the main awareness raising tool for local communities. Climate change, climate risk and adaptation related information are mainly shared through the radio and agriculture extensionists. Therefore, in collaboration with Radio Huguka, a local community radio, the Rwanda Climate Services for Agriculture (RCSA) project has created 225 listeners' clubs. These clubs are headed by farmer promoters, trained in Participatory Integrated Climate Services for Agriculture (PICSA)* and also in managing such clubs.

The listeners' clubs encourage farmers to actively follow climate and agriculture related information in order to enhance their knowledge and capacity to mitigate, adapt and manage climate risks in agriculture. During the Huguka show, farmers call and send messages and questions focused on climate services in agriculture. At least three clubs participate and directly share their views during the broadcasts. As journalists facilitate the talk shows, experts from the Ministry of Agriculture and Animal Resources (MINAGRI), the Rwanda Agriculture Board (RAB) and the Rwanda Meteorology Agency (Meteo Rwanda) respond to the inquiries of farmers.

In a recent visit to the Abahuje Tunza club, located in the southern province and Icyizere Cy'ejo Heza club from the eastern province, around 25 club members met at a members' home to listen to the Huguka show. Following along the direct broadcast through a small radio and the telephone of the club leader, the farmers learned about the use of climate information for agricultural livelihoods.

A look into farmer radio broadcasts

The Huguka show is also an opportunity for farmers raise their concerns about climate change and agriculture and learn about other practices. This contributes to increased engagement in finding solutions. "In our region, we don't know techniques for storing fodder during the dry season, so we are happy to learn from experts or farmers from other regions" said the village leader and Abahuje Tunza club member, Eduard Mugenzi, during the broadcast on fodder storage. "We have an old technique that we use to store livestock food by putting the grass in a pit and covering it with shrubs and soil to keep them from drying" responded a farmer from the western province. As many other club members were unfamiliar with the technique, experts from RAB will be brought in to fill this knowledge gap and explain more on fodder and storage in the dry season.

In the broadcast on pest control, members of Icyizere Cy'ejo Heza club shared their concerns about armyworms that destroy maize crops. While the pest is common to many farmers, they have limited knowledge on its control. "Until now, we have no solution to the armyworms and it's really

N.Palmer (CIAT)

Farmers receive training on climate information as part of the Rwanda Climate Services for Agriculture project.

a big problem since they destroy whole crops and we really suffer from crop losses" said Augustin Nyabyenda, a club member of Icyizere Cy'ejo Heza. To address such challenges, the Huguka show has equipped farmers with new techniques and skills, becoming something of a knowledge basin. Specific skillsets include using seasonal forecasts every season, planting in lines, preparing the land before the season starts and using fertilizers to help crops survive climate variabilities during the season.

Farmers have expressed that they enjoy participating in the listeners' clubs and are particularly happy to share their perspectives on the radio. Club members come from all walks of life, even including those in charge of village development and health coverage, boosting the acceptance of the agro-climate broadcasts across the villages.

** PICSA is a participatory agricultural extension approach, developed by researchers at the University of Reading. PICSA aims to support smallholder farmers to make informed decisions, under variable and changing climatic conditions. It does this through combining: i) accurate, locally-specific climate and weather information, ii) locally relevant crop, livestock and livelihood options, and iii) participatory decision-making tools.*

Read more:

News update: Putting seasonal forecasts in the hands of Rwandan farmers: https://bit.ly/33ccWZG
News update: Trainings in climate services for agriculture reach all of Rwanda: https://bit.ly/38DuYFn
News update: New partnerships launched to bolster climate services in Rwanda: https://bit.ly/3aJWAu3

Yvonne Munyangeri is Project Assistant at CIAT-Rwanda. Seble Samuel is the Communications and Knowledge Management Officer for CCAFS East Africa.

Out & About

1. CCAFS East Africa staff in Addis Ababa June 12-14, 2019 for the Global Challenges Programme (GCP) 4, with eight CSA projects spanning Eastern Africa. 2. Farmers and partners come together in Nyando, Kenya in September 2019 to launch Nyando's community seedbank (NYACOSEB), to protect biological diversity and boost climate resilience. 3. Southern African Confederation of Agricultural Unions exchange with CCAFS East Africa in Southern Ethiopia in September 2019, learning and sharing experiences for resilient food systems and agricultural livelihoods. 4. Tanzania's Women Parliamentarian Group came together in September 2019 for an awareness creation workshop on the climate and gender nexus. 5. CCAFS led a monitoring data collection training in Doyogena climate-smart landscape in Southern Ethiopia in November 2019. 6. CCAFS EA team at the 5th Global Science Conference on Climate-Smart Agriculture 2019 in Bali, Indonesia.

In our diary

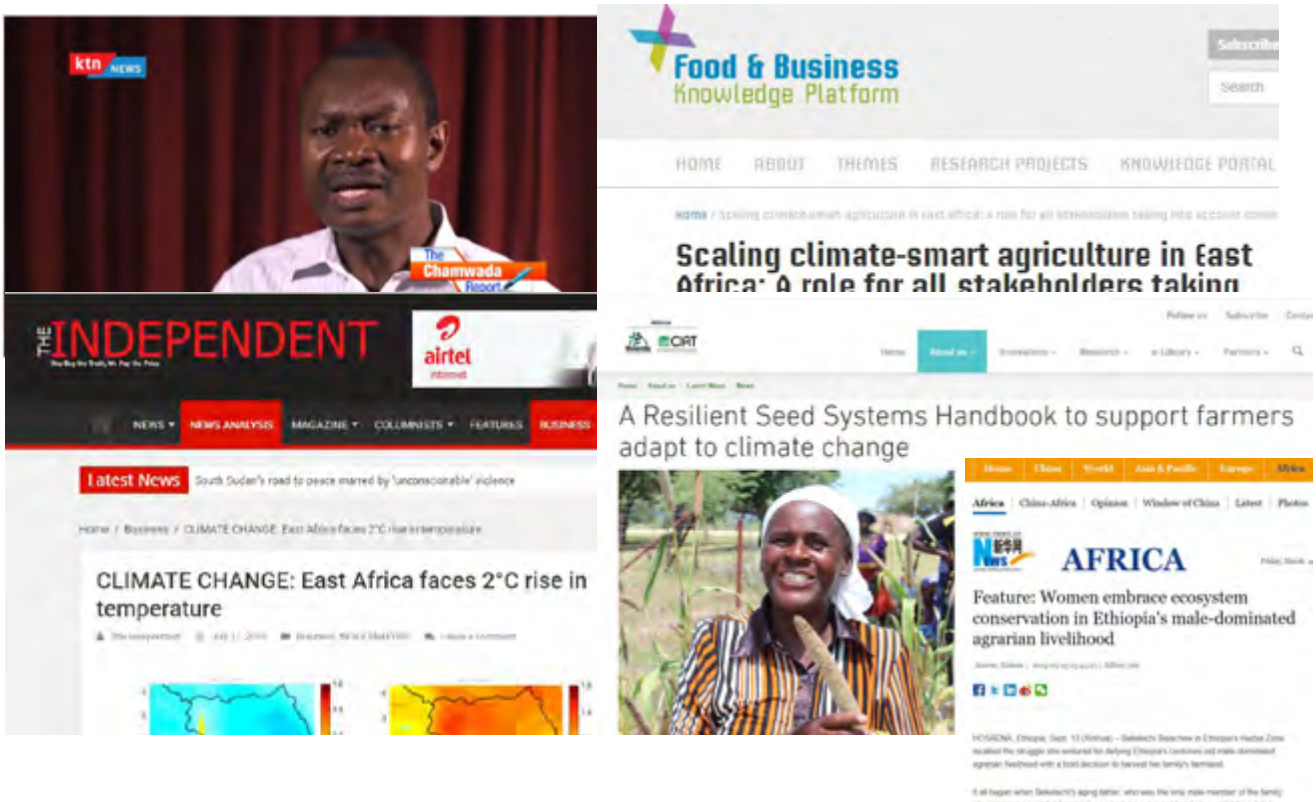
February
11-13
2020
The 6th International Conference on Climate Services (ICCS 6)
Venue: Pune, India

March
10
2020
Webinars: Expansion of Climate Bonds Standard into sustainable agriculture
Venue: Online

March
12
2020
Gender Equality in Climate Smart Agriculture: Gender and climate policy information for policymakers and planners
Venue: Online

March
19
2020
Gender Equality in Climate Smart Agriculture: Indicators and measuring impact
Venue: Online

CCAFS EA in the media



Ethiopian farmers move on to greener pastures | Afro FM: https://bit.ly/38PgFhh
Why the government of Kenya is now investing heavily in water pans for irrigation | CHAMS Media: https://bit.ly/39P7TBc
Scaling climate-smart agriculture in East Africa: A role for all stakeholders taking into account contexts and needs | Food & Business Knowledge Platform: https://bit.ly/2IGjars
CLIMATE CHANGE: East Africa faces 2°C rise in temperature | The Independent: https://bit.ly/33gBa57
A Resilient Seed Systems Handbook to support farmers adapt to climate change | Bioversity International: https://bit.ly/3aWdrdo
Women embrace ecosystem conservation in Ethiopia's male-dominated agrarian livelihood | Xinhuanet: https://bit.ly/2QcVuzb
Sharing new approaches to bring together gender, youth, nutrition and climate | IFAD: https://bit.ly/2QfafS1
The Future We Want is RESILIENT | C40 Cities: https://bit.ly/2w6F9VL
The Digital Revolution: Communication technologies and the future of agriculture | Climate & Agriculture Network for Africa: https://bit.ly/3cPqVZY
Eastern Africa focus on cutting emissions, boosting productivity | ACIAR Partners in Research for Development: https://bit.ly/2WeJHEf
Kenyan farmers hit by worst locust swarms in 70 years | Voice of America: https://bit.ly/2U5xNtE

Further Reading

CCAFS Latest Publications

Info Note: Gender assessment for women's economic empowerment in Doyogena climate-smart landscape in Southern Ethiopia: https://bit.ly/2Q6WQez

Info Note: Scaling climate-smart agriculture: Towards co-creating business models in the input supply chains and finance chains: https://bit.ly/2QcZDTQ

Info Note: Soil organic carbon sequestration for climate change mitigation in East African Climate-Smart Villages: https://bit.ly/2W9DCc3

Journal article: A double ITCZ phenomenology of wind errors in the equatorial Atlantic in seasonal forecasts with ECMWF models: https://bit.ly/2TLd1Rm

Journal article: Climate change adaptation and the role of fuel subsidies: An empirical bio-economic modeling study for an artisanal open-access fishery: https://bit.ly/33h8CJ0

Journal article: Impacts of intensifying or expanding cereal cropping in sub-Saharan Africa on greenhouse gas emissions and food security: https://bit.ly/33cMeAb

Project newsletter: Rwanda Climate Services for Agriculture: Transforming Rwanda's rural farming communities and national economy through improved climate risk management - Project Newsletter 2019: https://bit.ly/38QRDyo

Working paper: Gender implications of the Koronivia Joint Work on Agriculture: Background paper for the AGNES pre-SBs 50 strategy meeting on agriculture and food security: https://bit.ly/2TYuyUN

CCAFS Tools

CCAFS website and blog Updated daily with news on policy and practice, research, events and downloadable publications from the CGIAR and partners. http://bit.ly/1gX2uKi Blog: http://bit.ly/Blogs_EastAfrica

Adaptation and Mitigation Knowledge Network (AMKN) Map-based platform for sharing data and knowledge on agricultural adaptation and mitigation. http://bit.ly/AMKN_Maps

AgTrials Large public repository of agricultural trial data sets, with different crops, technologies and climates. http://bit.ly/AgTrials

Food Security CASE maps Map-based projections of crop area and yields, average calorie availability, and international trade flows across the world. http://bit.ly/Casemaps

MarkSim II Generator Future location-specific rainfall series, based on a choice of General Circulation Models: http://bit.ly/MarkSimGCM

GCM data portal Set of downscaled climate data sets. http://bit.ly/Climate_Data

Dataverse Public portal Full CCAFS data sets such as the baseline surveys from CCAFS East Africa sites that include information on farmers' current adaptive practices. http://bit.ly/Baseline-Surveys

Big Facts website Get all the links on climate change, agriculture and food security: http://bit.ly/1gYWjWt

Atlas of CCAFS sites Browse colorful maps of CCAFS research sites in three regions: East Africa, West Africa and South Asia: http://bit.ly/1iSfwHd

Core Sites in the CCAFS regions This portfolio includes brief descriptions of CCAFS core sites in East Africa, West Africa and South Asia, including coordinates of the sampling frames of the baseline surveys: http://bit.ly/1dKwrfG

Adaptation and Mitigation Knowledge Network Map-based platform for sharing data and knowledge on agricultural adaptation and mitigation: http://bit.ly/1kiEnng

Climate Analogues This is a tool that uses spatial and temporal variability in climate projections to identify and map sites with statistically similar climates across space and time: http://bit.ly/1pzmVhl

Climate and Agriculture Network for Africa This web-based platform seeks to link scientists with policy makers to address climate change, agriculture and food security issues in Africa. http://bit.ly/1BHmhG0

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RESEARCH PROGRAM ON Climate Change, Agriculture and Food Security

CCAFS East Africa is hosted by ILRI

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Bioversity International
CIAT
Research supported by:
CGIAR Fund
European Commission
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